

Serial No.: 10/659,464
Reply to Office communication of June 1, 2006

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Listing of the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1. (Cancelled)

Claim 2. (Currently amended) The method of ~~claim 1~~ claim 13 further comprising providing the photodefinable copolymer material by a process comprising:

mixing tetrafluoropropyl methacrylate, methyl methacrylate, cyclohexanone, a chain transfer agent, and benzoyl peroxide;

degassing, heating, and cooling the resulting mixture; and

adding and mixing anisole and the epoxy monomer.

Claim 3. (Currently amended) The method of ~~claim 1~~ claim 13 wherein volatilizing comprises forming a single-mode waveguide.

Claim 4. (Currently amended) The method of ~~claim 1~~ claim 13 wherein fixing the optical elements comprises fixing elements selected from the group consisting of waveguides, fibers, light emitting devices, light detecting devices, and combinations thereof.

Claim 5. (Currently amended) The method of ~~claim 1~~ claim 13 wherein sending the light comprises controlling the light intensity to be slightly above a threshold condition for volatilization of the photodefinable copolymer material.

Claim 6. (Original) The method of claim 5 wherein the acts of sending the light and volatilizing the uncured monomer are performed in sequence at least twice with each subsequent performance resulting in an extension of the waveguide.

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Claim 7. (Currently amended) The method of ~~claim 1~~ claim 13 wherein sending the light through the at least one of the optical elements and the photodefinable copolymer material towards the other of the optical elements comprises sending the light through each of the optical elements and the photodefinable copolymer material towards the other of the optical elements.

Claim 8. (Original) The method of claim 7 wherein sending the light comprises controlling the light intensity to be slightly above a threshold condition for volatilization of the photodefinable copolymer material.

Claim 9. (Original) The method of claim 8 wherein the acts of sending the light and volatilizing the uncured monomer are performed in sequence at least twice with each subsequent performance resulting in an extension of the waveguide.

Claim 10. (Original) The method of claim 4 wherein fixing occurs after depositing.

Claim 11. (Original) The method of claim 4 wherein fixing occurs prior to depositing.

Claim 12. (Original) The method of claim 11 wherein depositing comprises depositing the photodefinable copolymer material between the optical elements.

Claim 13. (Currently amended) ~~The method of claim 1~~ A method of forming a waveguide comprising:

depositing a photodefinable copolymer material comprising methyl methacrylate, tetrafluoropropyl methacrylate, and an epoxy monomer over a substrate;

fixing optical elements relative to the photodefinable copolymer material;

sending light through at least one of the optical elements and the photodefinable copolymer material towards the other of the optical elements; and

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volatilizing uncured monomer from the photodefinable copolymer material to form the waveguide; and

wherein sending light through at least one of the optical elements comprises using a writing light source to supply light through a first path of a splitter and expose the waveguide, using a signal light source to supply light through a second path of the splitter, and monitoring the resulting waveguide to evaluate the path of the signal light.

Claim 14. (Currently amended) The method of ~~claim 1~~ claim 13 wherein volatilizing the uncured monomer from the photodefinable copolymer material to form the waveguide comprises forming a ridge waveguide.

Claim 15. (Original) The method of claim 14 further comprising depositing and curing a first core layer on the substrate, and wherein depositing the photodefinable copolymer material over the substrate comprises depositing a second core layer over the first core layer.

Claim 16. (Currently amended) The method of ~~claim 1~~ claim 13 wherein volatilizing the uncured monomer from the photodefinable copolymer material to form the waveguide comprises forming a loaded waveguide.

Claim 17. (Original) The method of claim 16 further comprising depositing and curing a core layer on the substrate, wherein depositing the photodefinable copolymer material over the substrate comprises depositing a cladding layer over the core layer.

Claim 18. (Currently amended) The method of ~~claim 1~~ claim 13 wherein the optical elements comprise photonic modules and are fixed on a substrate, wherein depositing the photodefinable copolymer material comprises depositing the copolymer material between optically active segments of the photonic modules.

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Claim 19. (Original) A method of forming and using a waveguide comprising:

depositing a photodefinable copolymer material over a substrate;

fixing optical elements relative to the photodefinable copolymer material, at least one of the optical elements comprising a splitter;

sending light through the at least one of the optical elements and the photodefinable copolymer material towards another of the optical elements, wherein sending comprises supplying light through the at least one of the optical elements through a first path of the splitter;

volatilizing uncured monomer from the photodefinable copolymer material to form the waveguide; and

using the waveguide by transmitting an optical signal through a second path of the splitter.

Claim 20. (Original) The method of claim 19 wherein sending light through at least one of the optical elements comprises using a writing light source to supply light through a first path of a splitter and expose the waveguide, using a signal light source to supply light through a second path of the splitter, and monitoring the resulting waveguide to evaluate the path of the signal light.

Claim 21. (Original) The method of claim 20 wherein the writing light source comprises an Argon laser and the signal light source comprises a helium neon laser.

Claim 22. (Original) The method claim 19 wherein the photodefinable copolymer material comprises methyl methacrylate, tetrafluoropropyl methacrylate, and an epoxy monomer.

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Claim 23. (Original) The method of claim 22 further comprising providing the photodefinable copolymer material by a process comprising:

mixing tetrafluoropropyl methacrylate, methyl methacrylate, cyclohexanone, a chain transfer agent, and benzoyl peroxide;

degassing, heating, and cooling the resulting mixture; and

adding and mixing anisole and the epoxy monomer.

Claims 24-60. (Cancelled)

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